

ABSTRACT

A diaphragm optic sensor comprises a ferrule including a bore having an optical fiber disposed therein and a diaphragm attached to the ferrule, the diaphragm being spaced apart from the ferrule to form a Fabry-Perot cavity. The cavity is formed by creating a pit in the ferrule or in the diaphragm. The components of the sensor are preferably welded together, preferably by laser welding. In some embodiments, the entire ferrule is bonded to the fiber along the entire length of the fiber within the ferrule; in other embodiments, only a portion of the ferrule is welded to the fiber. A partial vacuum is preferably formed in the pit.

A small piece of optical fiber with a coefficient of thermal expansion chosen to compensate for mismatches between the main fiber and ferrule may be spliced to the end of the fiber.